veloped, which forms vanadates with a part of the vanadic acid employed in the process.—Ammonical cyanides of zinc, by M. Raoul Varet. The chloride, bromide, and iodide of zinc combined with ammonia yield a relatively large number of compound substances. But with the cyanide of zinc, whatever be the conditions, the only substances obtained are $ZnCy,NH_3HO$ when the reaction takes place in the presence of water, and $ZnCy,NH_2$ in all other cases.—Application of a method of de Senarmont to the reproduction of celestine and anglesite by the wet process, by M. L. Bourgeois. The process by means of which de Senarmont obtained artificial crystals of barytine is here applied to the production of the allied minerals, celestine and anglesite.—On the importance of the nutritive function in determining the distinction between plants and animals amongst the lower organisms, by M. P. A. Dangeard. The Chytridineæ and the Chlamidomonadineæ, the two primary groups of the vegetable kingdom, are both connected below with the Flagellæ, branching off upwards one to the Algæ the other to the Fungus group. It is here shown that by the process of nutrition alone is it possible to determine the point where plant and animal become differentiated.—On the suckers of the Rhinantheæ and Santalaceæ, by M. Leclerc du Sablon. These hold an intermediate position between non-parasitic and true parasitic plants, drawing their nutriment both through their roots and through suckers from other plants. The present observations deal exclusively with the suckers and their various functions.—On the discovery of carboniferous formations with marine and vegetable fossils in the neighbourhood of Raon-sur Plaine, by M. Bleicher. The recent discovery of coal in this district supplies the connecting link between the carboniferous measures of the Bruche and Rabodeau valleys (Alsace and Lorraine).

BERLIN.

Physiological Society, November 4.—Prof. du Bois Reymond, President, in the chair.—Dr. Goldschneider spoke on the fact, which has been known for a long time, that when carbonic acid gas is allowed to come in contact with the skin it produces a greater sensation of warmth than air of the same temperature. He has carried out a prolonged series of experiments to determine the cause of this increased sensation of heat. He examined first the purely physical factors which might have some influence on the observed facts—namely, the moistness, specific heat, and heat-absorption by the gases. When he compared the sensation of heat produced by moist air with that produced by dry air, he found that the former always seemed the greater; the difference between the two might be as much as 5° C. to 6° C. when the air was at a higher temperature than that of the skin. Thus, air at 35° C. whose saturation with moisture was 80 produced the same sensation of heat as air at 41° C. whose saturation was only 30. When experimenting with carbonic acid gas he found that a difference of 40 in the saturation produced a difference in the resulting sensation of heat corresponding to 2° to 3° of temperature. But even when equally moist or dry air and carbonic acid gas were allowed to act on the skin the sensation of heat produced by the latter was always the greater. It does not seem possible to explain the greater sensation of heat with carbonic acid gas by reference to the extremely small differences of specific heat of air and this gas, still less by reference to their somewhat greater coefficients of heat absorption. He also investigated the effect of the more ready absorption of carbonic acid gas by fluids, by removing the epidermis with a blister on a circumscribed portion of the skin and allowing the gas to act upon this place. The carbonic acid gas was speedily absorbed by the lymph, but it still produced a sensation of greater heat even when all moisture was removed from the surface exposed by the blister. He hence considers that the purely physical properties of the gas will not suffice to explain its remarkable influence on the sensory nerves for heat. Dr. Goldschneider next investigated the physiological factors which might suffice to explain the observed phenomenon. He proved that there is no recognizable objective rise of temperature under the influence of the carbonic acid gas. It is true that he observed now and again a distinct dilatation of the blood-vessels, but this was by no means constant, and not sufficient to account for the increased sensation of heat. He proved however as has been observed by many physiologists, that the carbonic acid gas has a direct effect upon the sensory nerves; but in contrast to the results of others, who attribute an anæsthetic action to this gas, he observed that at first it produces a hyperæsthesia of those nerves specially connected with the production of heat sensations, and then this makes way for an anæsthesia. The nerves connected with heat sensations were more strongly stimulated than those connected with sensations of cold. The speaker summed up the results of his extremely numerous experiments by urging that in addition to the greater absorption of heat by the carbonic acid gas and its power of producing hyperæmia of the skin, its action is to be explained chiefly by its direct chemical action on the endings of the nerves concerned in the production of sensations of heat. This therefore is to be regarded as the cause of the observed phenomenon that when carbonic acid gas is brought into contact with the skin it produces a greater sensation of heat than does the contact of equally warm and equally dry air.

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CONTENTS.